Presentation To The "United States Japan Natural Resources" Marine Facilities Panel Tokyo Japan (New Sanno Hotel)

"U.S. Navy Oceanography and Meteorology Program" by Mr. Jerry Carroll, Naval Meteorology and Oceanography Command

The Naval Meteorology and Oceanography Command is located in southern Mississippi on the Gulf Coast. Facilities and personnel are located worldwide, including aboard Navy ships (Figure 1). The command traces its history to the Depot of Charts and Instruments formed in the early 1800s. In the mid 1970's, the Navy's Meteorology and Oceanography programs were integrated reflecting natures close interaction of sea and air (Figure 2).

From the Navy's point of view, the environment can be a formidable adversary or a welcome ally. The weather and the ability to predict it have affected the outcome of battles, the fate of nations, and ultimately the course of history. Our programs are designed to provide support to the Department of Defense in three major mission areas (Figure 3). Today the command's Fleet Numerical Meteorology and Oceanography Center in Monterey, CA is the master computer center that produces global and regional scale meteorological and oceanographic prediction products, including analyses, forecasts and tactical decision aids for direct operational use by Navy ships and aircraft (Figure 4). The center is the worlds leader in automated ocean and coupled air-sea model operation and maintains the world's most complete collection of real time meteorology and oceanographic data (Figures 5, 6, 7).

Our regional centers are located at Norfolk, VA; Rota, Spain; Pearl Harbor, HI; San Diego, CA; Yokosuka, Japan; and Bahrain (Figure 8). They use products from Monterey and the production center at the Naval Oceanographic Office located at Stennis Space Center to provide local meteorological and oceanographic services (Figure 9). In addition, teams of skilled personnel from the centers and facilities embark onboard Navy ships for specific operations, exercises, or deployments. They assist with the interpretation of products received from the centers ashore and generate support products using on-scene observations of air and ocean conditions. These products that can be vital to operations include information on surf, weather, ice, and oceanography. In addition, permanent detachments of personnel are located on our aircraft carriers and our large ships.

The Naval Oceanographic Office (NAVOCEANO) is the major source of oceanographic data and operates a fleet of ships to make observations and by its hydrographic surveys ensure the safe navigation of our ships outside our national territorial waters (Figures 10, 11). In addition, NAVOCEANO is the national center of excellence for multi-channel sea surface temperature and maintains the Navy's Satellite Altimetry Data Fusion Center (Figures 12, 13). The Naval Ice Center at Suitland, MD is part of NAVOCEANO and provides a variety of ice products to our customers (Figure 14).

Satellite imagery is used to determine sea height, sea surface temperature, ocean currents, upwelling, water masses in the sea, frontal boundaries, and eddies. Ships and autonomous underwater vehicles are used to measure physical properties within the water column, collect geophysical characteristics of the oceans, and to define the shape and texture of the ocean floor.

Part of our mission is to provide optimum routing of our aircraft and ships to take advantage of the weather and oceanographic conditions to save fuel and to ensure safety of operations. The center at Monterey operates programs and models to provide the routing using its Cray supercomputers (Figures 15, 16).

The command maintains a very active program to encourage today's school children to develop into tomorrow's oceanographers, meteorologists, engineers, and scientists. Through our various programs in cooperation with the National Science Foundation and universities, youngsters are selected each summer, along with their teachers, to go to sea aboard our oceanographic ships. In addition, high school and college students are hired for summer employment and into our cooperative program for part time work.

The command encourages our personnel to be active in professional organizations and to participate in forums such as the UJNR Marine Facilities Panel (Figure 17).

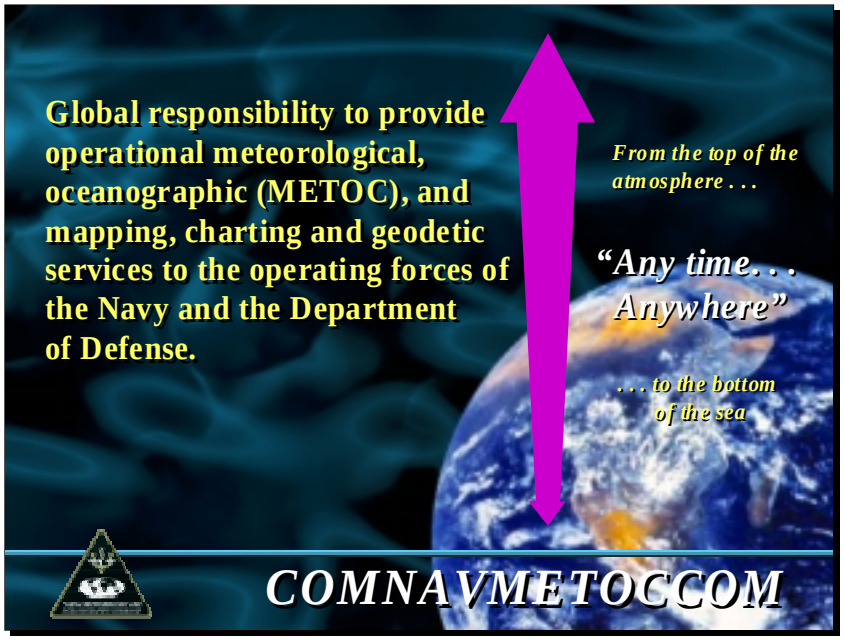


Figure 1

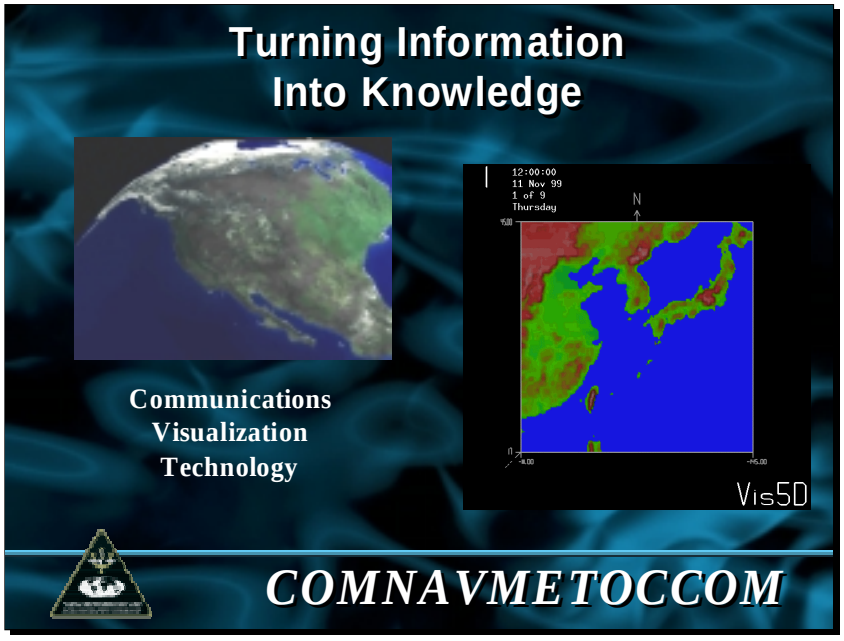
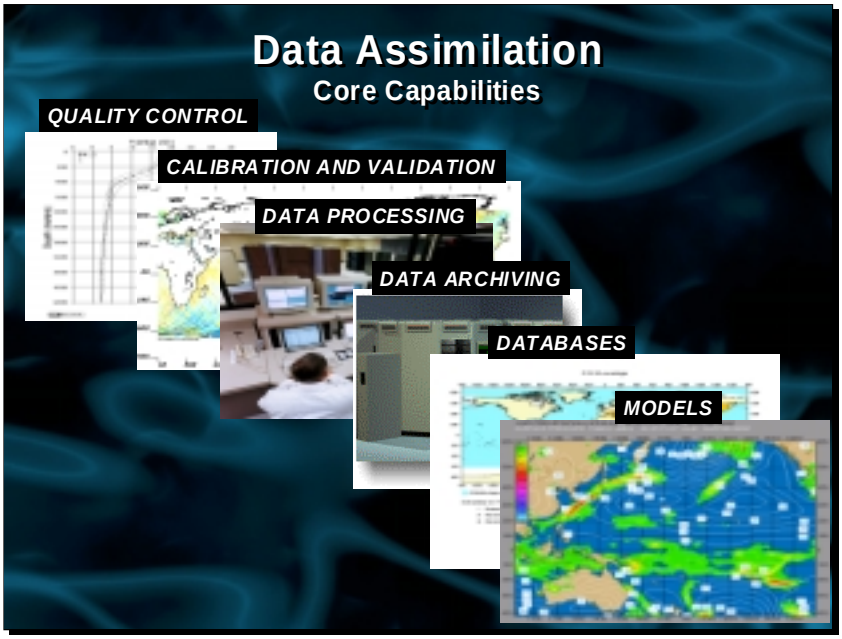


Figure 2

Figure 3



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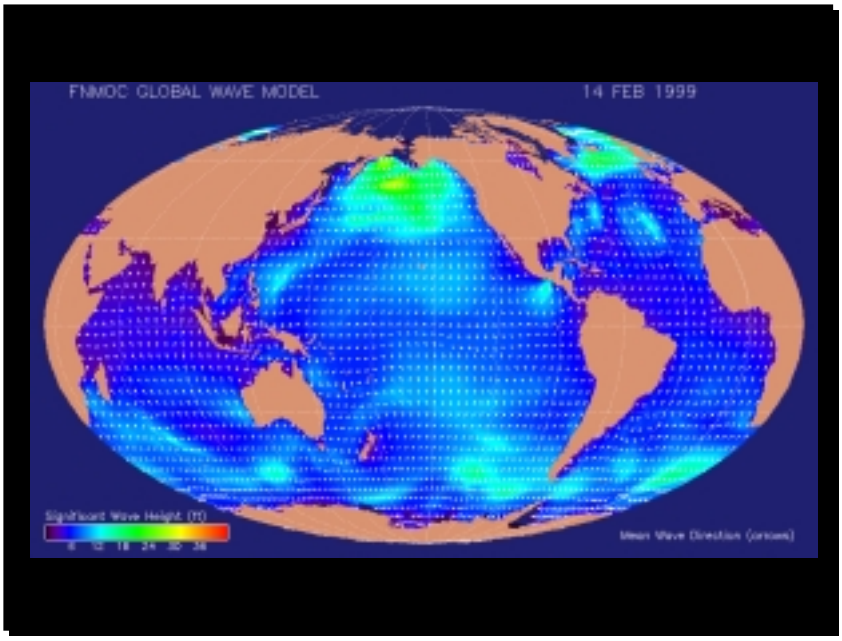

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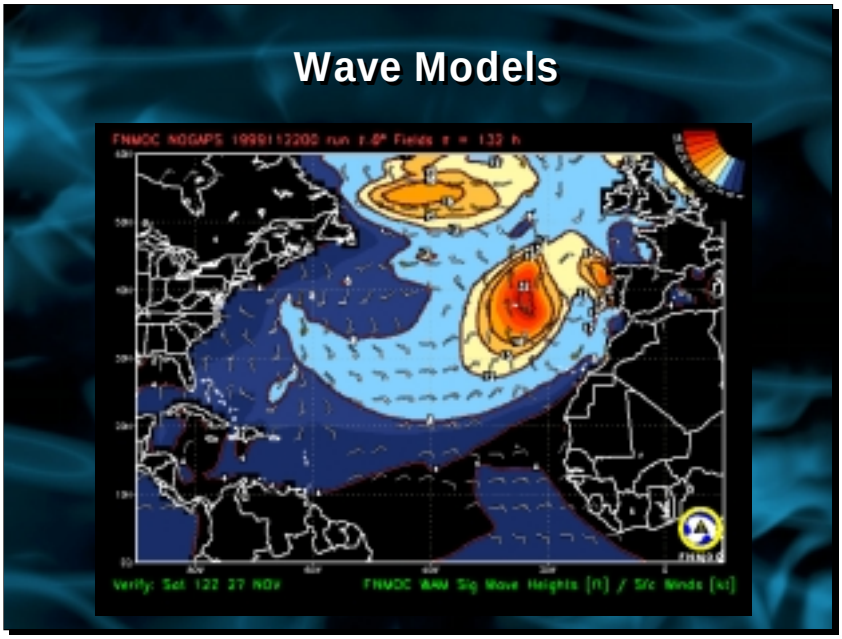

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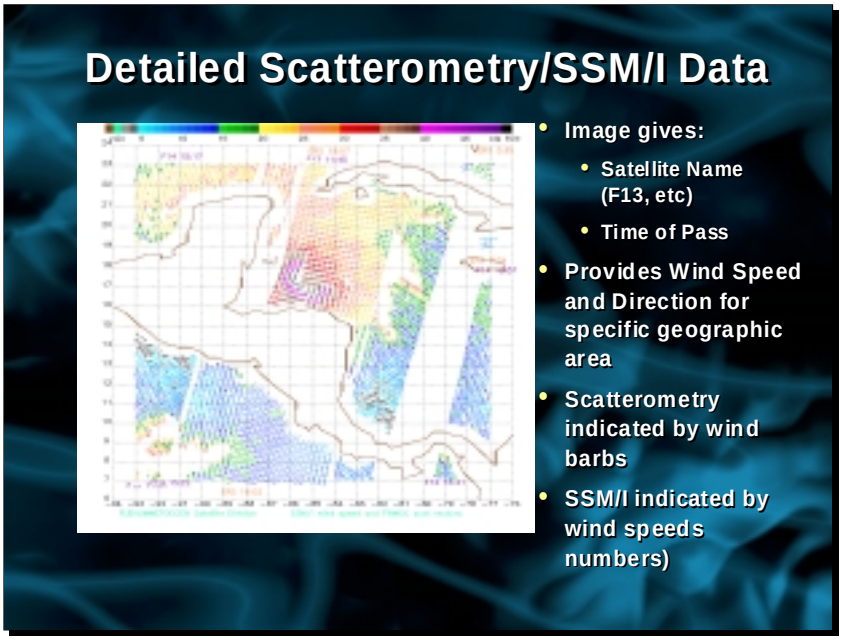

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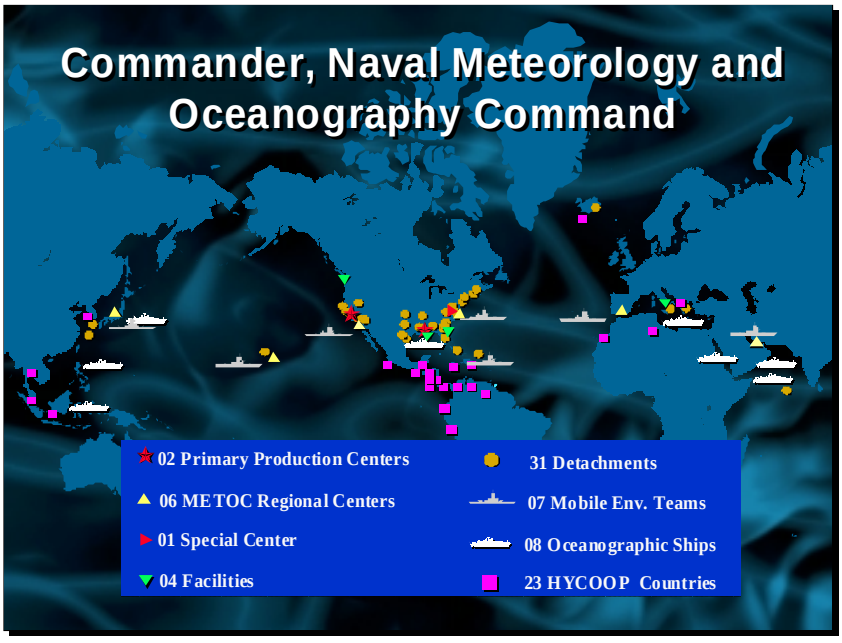

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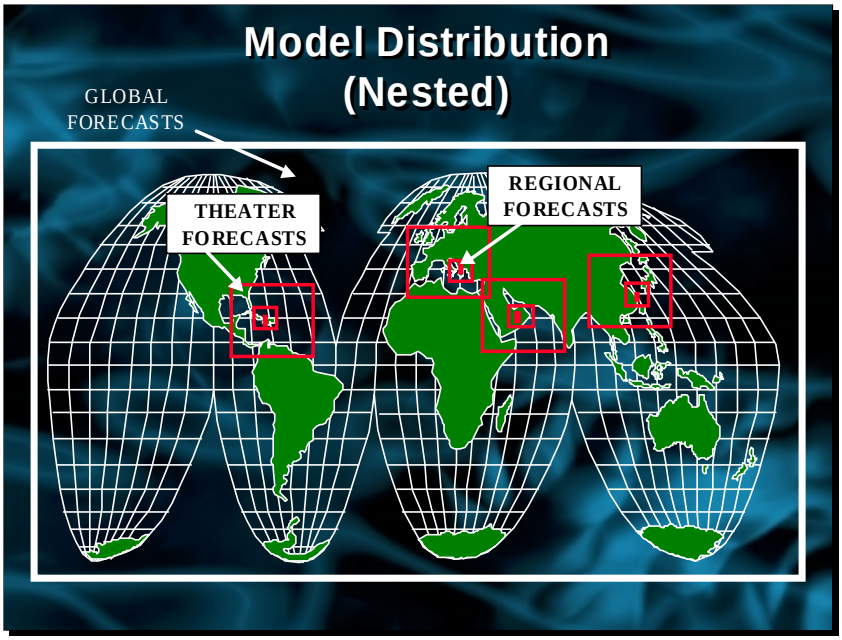
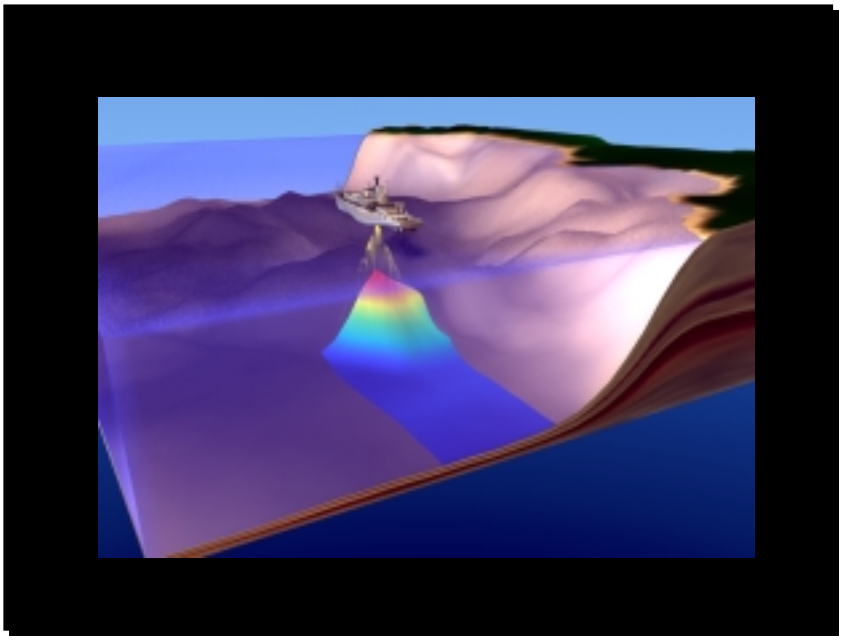


Figure 9

Figure 10



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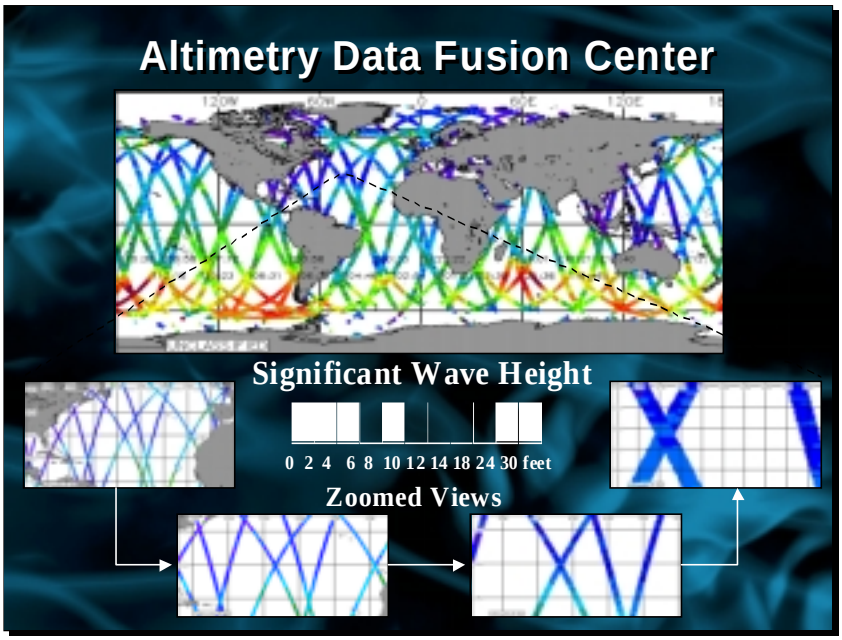

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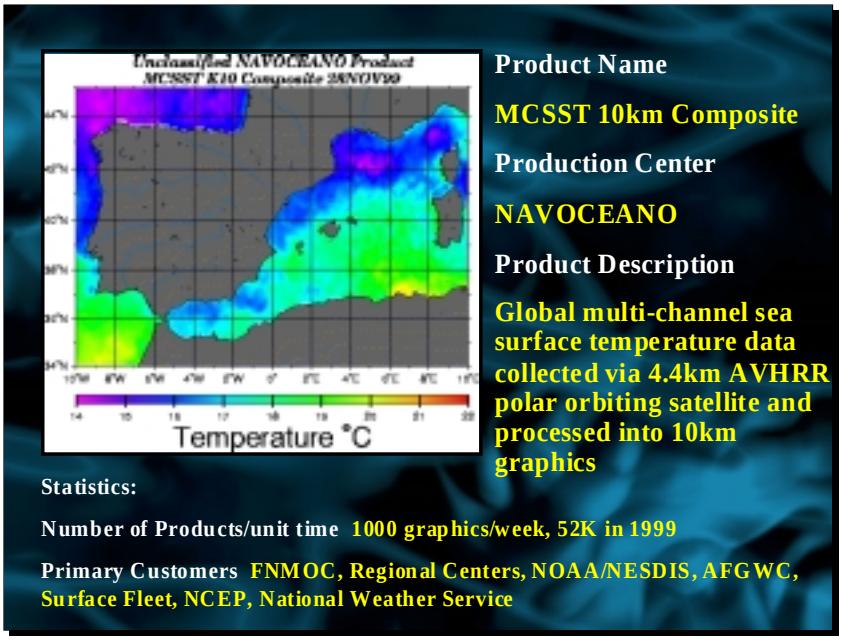

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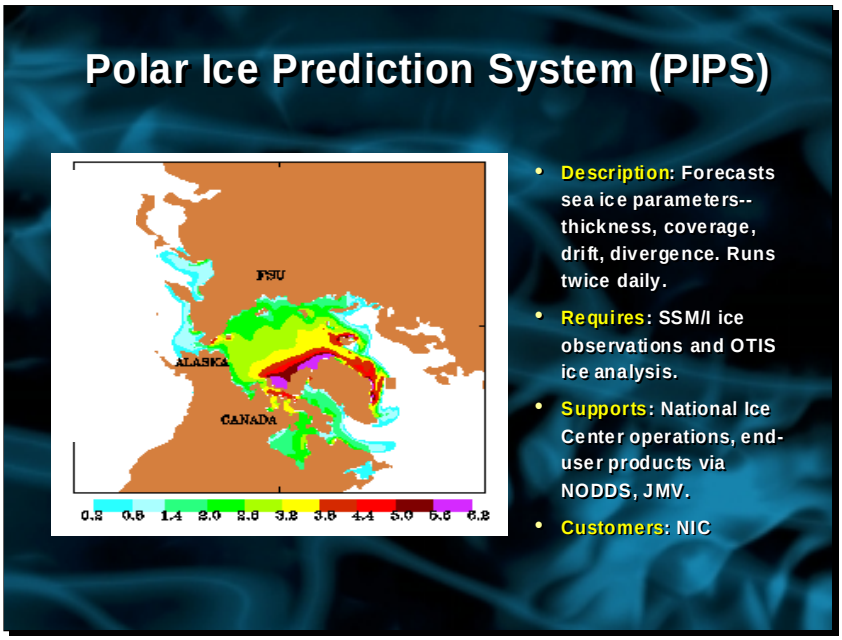

Figure 14

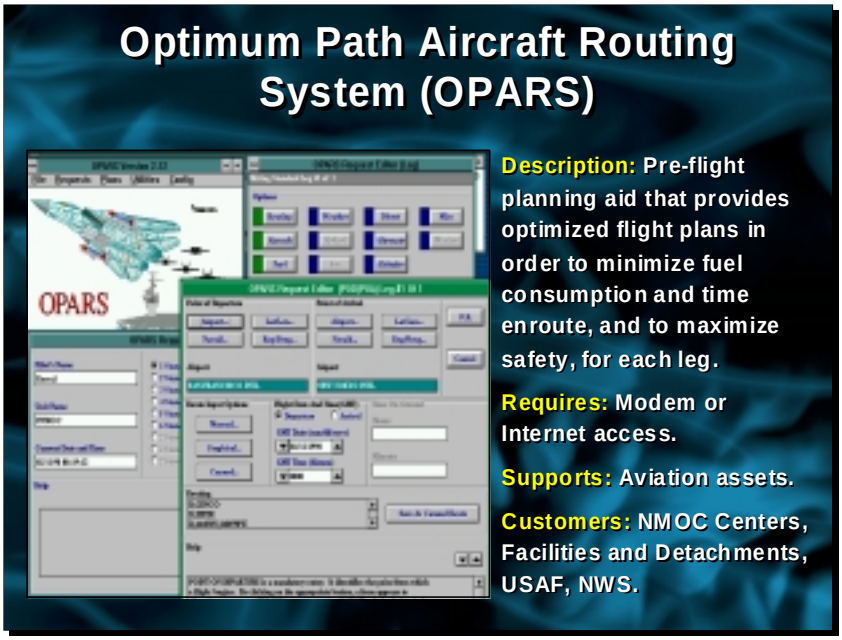

Figure 15

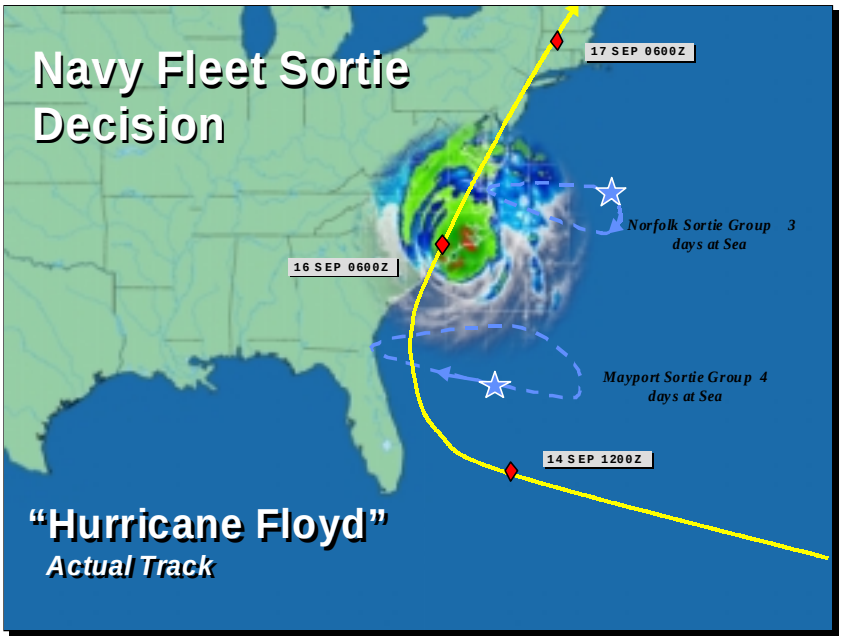

Figure 16

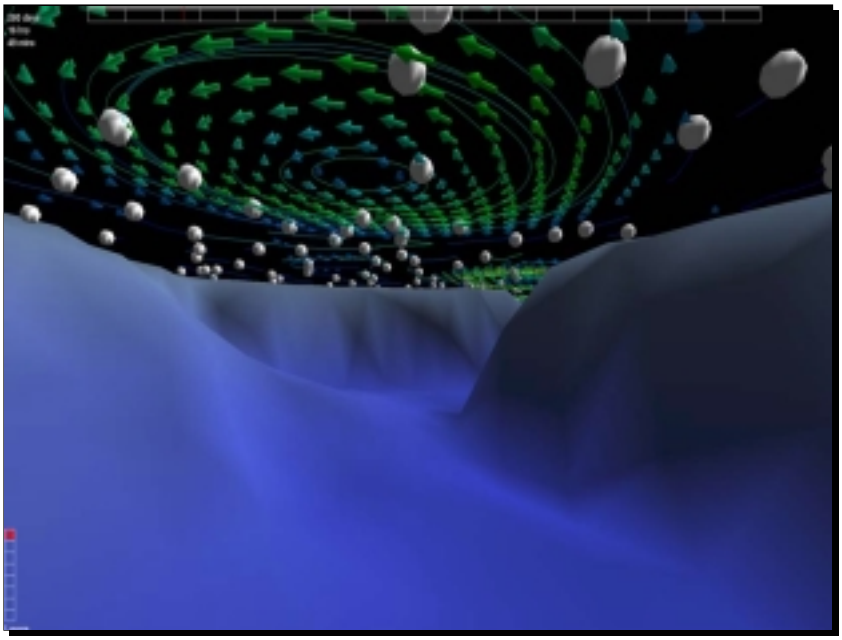

Figure 17